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ABSTRACT

This is the teacher's guide to accompany the student guide which together comprise one of five computer-oriented environmental/energy education units. This unit is organized around a computerized data base of information related to global energy use. The data is organized on a country-by-country basis for the 83 largest countries in the world. For each country, data have been stored on 24 variables, such as use and production of energy, per/capita income, energy reserves, and so on. Using the computer program, students are guided through a series of inquiries into the data base. The data base may be expanded by the teacher. These materials are designed for grades 9 through 14 and are appropriate for Social Studies and Environmental Education or Science courses. This teacher's guide presents: (1) an introduction to the unit; (2) background information on the program and how to use it; (3) student exercises; (4) information sources; and (5) program listing. (HR)

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Prospective users of this manual are urged to first run the sample simulation program provided in order to determine any needed or desirable adjustments prior to use.

September 1975

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INTRODUCTION TO THE UNIT

Unit Description

Subject Areas: Social Studies, Environmental Education

Topic: Global Dimensions of the Energy Shortage

Abstract: This unit is organized around a computerized data base of information related to global energy use. The data is organized on a country-by-country basis for the 83 largest countries in the world. For each country, data has been stored on 24 variables, such as use and production of energy, per capita income, energy reserves, and so on.

Using the computer program, EARTH, students are guided through a series of inquiries into the data base. These inquiries are based on questions and hypotheses related to the global use of energy, such as "What factors are associated with high consumption of energy?" and "What are the current patterns and trends in energy use?"

The data base may be expanded by the teacher to allow further exploration into the factors associated with energy use and production.

Grade Level: 9-14

Computer Language: BASIC

Program Name: EARTH

Objectives

The primary objectives of this unit are:

1. To allow students to examine the energy crisis with a view to understanding the correlates of the program.

2. To allow students to examine data reflecting the nations of the world so they come to understand the global dimensions of the energy shortage.

3. To provide a hypothesis-testing system which is open-ended; that is, it allows the student to explore the data base in complete freedom after the initial exercises have been completed.

Overview of the Program EARTH and its Options

The EARTH program is designed for use as an inquiry system with a data base involving 24 variables (from population and income figures to coal production and natural gas reserves) for 83 of the major countries of the world.

For inquiry students are given two options with program EARTH. Using the "Table" option, students may obtain a table for up to 5 variables at a time for any or all of the 83 countries. Using the "Rank" option, students may obtain an ordered listing (from high to low) on one variable. This option also allows the student to ask for a specified number of countries from the top or the bottom of the rank order list.

Using program EARTH, students should be encouraged to hypothesize, to invent questions, and to gather data for testing the hypothesis or answering the questions.

Description of the Data Base

The data base used for student inquiry is, simply, the values of 24 variables for 83 countries. The specific variables, and the specific countries, are listed on pages 4-5. A complete listing of the data base can be found on pages 6-10. You will note that zeros have been entered for some values--zeros indicate "information not obtainable." If you find a source for any of this missing data, you may update the data base using the procedures in the next section.

List of Variables Stored for Each Country

Variable Number	Data
1	1971 population in millions
2	1971 population density per square kilometer
3	1963-1971 population increase rate, in %
4	Male life expectancy
5	Female life expectancy
6	Daily calorie consumption per capita
7	1968 national income in millions of dollars
8	1971 national income in millions of dollars
9	1968 energy production in million metric tons of coal equivalent
10	1971 energy production in million metric tons of coal equivalent
11	1968 energy consumption in million metric tons of coal equivalent
12	1971 energy consumption in million metric tons of coal equivalent
13	1968 energy consumption per capita in kilograms
14	1971 energy consumption per capita in kilograms
15	Coal reserves in million metric tons
16	1972 Coal production in thousand metric tons
17	Reserves of lignite and brown coal in million metric tons
18	1972 production of lignite and brown coal in thousand metric tons
19	Petroleum reserves in million metric tons
20	1972 production of petroleum in thousand metric tons
21	Natural gas reserves in thousand million cubic meters
22	1972 production of natural gas in million cubic meters
23	1971 production of electrical energy in million kilowatt hours
24	1971 production of manufactured gas in million cubic meters

List of Countries for Which Data is Stored

1. Afghanistan
2. Algeria
3. Argentina
4. Australia
5. Austria
6. Belgium
7. Bolivia
8. Brazil
9. Bulgaria
10. Burundi
11. Canada
12. Chad
13. Chile
14. China
15. Colombia
16. Cuba
17. Czechoslovakia
18. Denmark
19. Dominican Republic
20. Ecuador
21. Egypt
22. El Salvador
23. Ethiopia
24. Finland
25. France
26. Germany
27. Ghana
28. Greece
29. Guatemala
30. Guinea
31. Haiti
32. Hong Kong
33. Hungary
34. India
35. Indonesia
36. Iran
37. Iraq
38. Israel
39. Italy
40. Ivory Coast
41. Japan
42. Kenya
43. Korea
44. Laos
45. Malaysia (West)
46. Mali
47. Mexico
48. Morocco
49. Netherlands
50. Nepal
51. Niger
52. Nigeria
53. Norway
54. Pakistan
55. Peru
56. Phillipines
57. Poland
58. Portugal
59. Romania
60. Rwanda
61. Saudi Arabia
62. Senegal
63. South Africa
64. Southern Rhodesia
65. Spain
66. Sri Lanka
67. Sudan
68. Sweden
69. Switzerland
70. Syrian Arab Republic
71. Thailand
72. Turkey
73. Uganda
74. United Kingdom
75. United Republic of Tanzania
76. USA
77. USSR
78. Upper Volta
79. Viet Nam
80. Yemen
81. Yugoslavia
82. Zaire
83. Zambia

FOR ALL COUNTRIES

AND VARIABLES 1 2 3 4 5

COUNTRY	VARIABLE 71 POP.	2 71 DENS.	POP. INCR	MALE EXP.	FEM. EXP.
AFGHANISTAN	17661	27	2.3	37.5	37.5
ALGERIA	14.764	6	3.5	50.7	50.7
ARGENTINA	25.558	8	1.5	64.1	70.8
AUSTRALIA	14.783	2	1.9	67.9	74.8
AUSTRIA	7.456	89	.5	66.6	73.7
BELGIUM	9.673	317	.5	67.7	73.5
BOLIVIA	5.063	5	2.6	49.7	49.7
BRAZIL	95.466	11	2.8	60.7	60.7
BULGARIA	8.54	77	.7	68.8	72.7
BURUNDI	3.615	130	2	35	38.5
CANADA	21.625	2	1.6	68.8	75.2
CHAD	3.8	3	2.3	39	35
CHILE	8.998	12	1.4	54.4	59.9
CHINA	787.176	82	1.8	50	50
COLOMBIA	21.772	19	3.2	44.2	46
CUBA	8.657	76	2.3	66.8	66.8
CZECHOSLOV.	14.5	113	.4	67.3	73.6
DENMARK	4.963	115	.7	70.8	74.7
DOM. REPUB.	4.182	86	2.9	57.8	58.7
ECUADOR	6.097	22	3.4	51	53.7
EGYPT	34.13	34	2.5	51.6	53.4
EL SALVADOR	3.647	170	3.7	56.6	60.4
ETHIOPIA	25.248	21	1.8	35.5	35.5
FINLAND	4.684	14	.4	65.6	72.6
FRANCE	51.24	94	.9	68.6	76.1
GERMANY	75.129	194	.7	67.6	73.6
GHANA	8.858	37	3	46	46
GREECE	8.85	67	.5	67.5	70.7
GUATEMALA	5.348	49	3.1	48.3	49.7
GUINEA	4.01	16	2.2	26	28
HAITI	4.989	179	2	44.5	44.5
HONG KONG	4.045	3918	2.1	66.7	73.3
HUNGARY	10.351	111	.5	66.3	72.7
INDIA	550.374	168	2.2	41.9	40.6
INDONESIA	124.694	64	2.8	47.5	47.5
IRAN	29.783	18	3	50	50
IRAQ	9.75	22	3.2	51.6	51.6
ISRAEL	3.013	146	3	70.1	73.4
ITALY	54.075	180	.8	67.9	73.4
IVORY COAST	4.48	14	2.4	41	41
JAPAN	104.661	283	1.1	69.1	74.3

(listing

KENYA
KOREA
LAOS
M. MALA
MALI
MEXICO
MOROCCO
NETHERL
NEPAL
NIGER
NIGERIA
NORWAY
PAKISTA
PERU
PHILLIP
POLAND
PORTUGA
ROMANIA
RWANDA
SA. ARA
SENEGAL
SO. AFR
S. RHOD
SPAIN
SRI LAN
SUDAN
SWEDEN
SWITZER
SY ARAB
THAILAN
TURKEY
UGANDA
UN. KIN
TANZANI
U.S.A.
U.S.S.R
UPPER V
VIET NA
YEMEN
YUGOSLA
ZAIRE
ZAMBIA

(listing for variables 1-5 continued)

KENYA	11.694	20	3.1	47.5	47.5
KOREA	46.198	210	2.4	57.7	57.7
LAOS	3.033	13	2.4	47.5	47.5
W. MALAYSIA	8.978	68	2.4	63.6	64.7
MALI	5.143	4	2.1	37.2	37.2
MEXICO	50.63	25	3.2	61	63.7
MOROCCO	15.234	34	2.2	50.5	50.5
NETHERLANDS	13.128	323	1.8	70.7	76.5
NEPAL	11.29	80	1.8	40.9	40.6
NIGER	4.136	3	2.7	41	41
NIGERIA	54.51	61	2.5	37.2	36.7
NORWAY	3.903	12	.8	71.1	76.8
PAKISTAN	116.593	140	16.7	53.7	48.8
PERU	14.015	11	3.1	52.6	55.5
PHILLIPINES	37.919	126	3	45.6	53.6
POLAND	32.749	105	.8	66.9	72.8
PORTUGAL	9.037	96	0	65.3	71
ROMANIA	20.42	86	1.1	65.5	62.6
RWANDA	3.827	145	2.9	41	41
SA. ARABIA	7.965	4	2.7	42.3	42.3
SENEGAL	4.088	21	2.4	41	41
SO. AFRICA	22.672	16	3.1	49	49
S. RHODESIA	5.5	14	3.3	51.4	51.4
SPAIN	34.134	68	1.1	67.3	71.9
SRI LANKA	12.762	195	2.3	61.9	61.4
SUDAN	18.087	6	2.6	47.6	47.6
SWEDEN	7.604	.18	.8	71.9	76.5
SWITZERLAND	6.324	153	1.2	68.7	74.1
SY ARAB REP	6.451	35	3.3	52.8	52.8
THAILAND	35.135	69	2.7	53.6	58.7
TURKEY	36.11	46	2.5	53.7	53.7
UGANDA	10.127	43	2.7	47.5	47.5
UN. KINGDOM	55.566	228	.4	67.8	73.8
TANZANIA	13.634	14	2.6	40	41
U.S.A.	207.05	22	1.1	71.1	71.1
U.S.S.R.	245.061	11	1.1	65	74
UPPER VOLTA	5.491	20	2.1	38.1	36.1
VIET NAM	40.404	185	2.5	50	50
YEMN	5.9	30	2.7	42.3	48.3
YUGOSLAVIA	20.55	80	1	64.3	68.9
ZAIRE	22.427	10	4.2	37.5	40
ZAMBIA	4.275	6	2.9	43.5	43.5

FOR ALL COUNTRIES
AND VARIABLES 6 7 8 9 10

COUNTRY	VARIABLE COL. CONS	68 INCOME	71 INCOME	68 EX P.I	71 EX CAP
AFGHANISTAN	2065	0	0	8.4	3.58
ALGERIA	1340	0	0	59.16	52.99
ARGENTINA	3160	16850	24500	30.56	37.63
AUSTRALIA	3161	27075	32999.	48.82	75.78
AUSTRIA	3040	0	14866	10.08	9.77
BELGIUM	3030	19497	26674	15.09	11.18
BOLIVIA	1750	792	1000	2.64	2.46
BRAZIL	2850	24914	40000.	17.66	20.29
BR.GUIANA	2070	0	0	16.03	14.8
BURUNDI	2330	160	200	0	0
CANADA	3200	58979.	81421.	161.22	223.7
CHAD	2240	0	0	0	0
CHILE	2560	4229	5100	6.85	9.08
CHINA	2050	0	0	0	0
COLOMBIA	2130	6030	8700	0	0
CUBA	2501	0	0	.17	.26
CZECHOSLOV.	3030	0	0	72.99	81.79
DENMARK	3050	11990	15334	.25	0
DOM. REPUB.	2041	1074	1513	.01	.01
ECUADOR	1951	1270	1610	.36	.31
EGYPT	2770	5955	7000	11.52	19.81
EL SALVADOR	1951	856	1004	.05	.06
ETHIOPIA	1960	1387	1750	.03	.03
FINLAND	2960	7302	10195	1.31	1.31
FRANCE	3070	114487.	132344.	61.87	54.22
GERMANY	3150	0	194147.	165.07	173.51
GHANA	2070	1642	2465	.32	.34
GREECE	2900	3	8877	2.1	3.92
GUATEMALA	2020	1489	1889	.02	.03
GUINEA	2060	282	315	0	0
HAITI	1530	402	500	0	0
HONG KONG	2970	6000	1519	0	0
HUNGARY	3190	0	0	81.75	83.24
INDIA	1990	0	46219.	82.74	84.91
INDONESIA	1970	0	10823	43.41	62.33
IRAN	2030	0	9764	184.63	317.59
IRAQ	2050	0	2547	94.89	110.07
ISRAEL	2990	0	4761	2.97	8.23
ITALY	3020	0	93508.	83.29	86.86
IVORY COAST	2630	1193	1410	.03	.02
JAPAN	2470	0	195885.	59.81	49.47

(listing for variables 6-10 continued)

KENYA	2200	1308	1598	.03	.04
KOREA	2270	0	8455	10.36	12.95
LAOS	2040	0	153	0	0
W. MALAYSIA	2190	0	2783	.1	.13
MALI	2130	0	0	0	0
MEXICO	2520	25605	36000.	53.69	59.2
MOROCCO	2130	2953	3660	.72	.76
NETHERLANDS	3200	0	33555.	28.22	64.15
NEPAL	2030	0	887	0	.01
NIGER	2170	369	0	0	0
NIGERIA	2290	4024	4750	9.48	99.61
NORWAY	2940	0	11191	7.8	8.47
PAKISTAN	2410	0	14738	5.08	7.31
PERU	2260	0	4933	6.01	5.27
PHILLIPINES	2040	0	8899	.85	.37
POLAND	3140	0	0	140.83	163.8
PORTUGAL	2920	0	7214	1.06	1.02
ROMANIA	3010	0	0	52.87	62.78
RWANDA	1900	163	266	.01	.01
SA. ARABIA	2080	0	2517	186.18	295.35
SENEGAL	2300	782	718	0	0
SO. AFRICA	2730	12340	16567	51.07	58.23
S. RHODESIA	2550	1085	1533	3.97	3.75
SPAIN	2770	0	34073.	16.79	44.54
SRI LANKA	2340	0	2005	.06	.1
SUDAN	2090	0	1701	.01	.01
SWEDEN	2850	0	38698	6.12	8.51
SWITZERLAND	3190	0	17954	3.67	4.01
SY ARAB REP	2450	0	1582	1.09	6.68
THAILAND	2210	0	6406	.28	.49
TURKEY	2760	0	12849	10.55	11.01
UGANDA	2160	895	1040	.09	.1
UN. KINGDOM	3170	0	125735.	173.71	175.01
TANZANIA	1700	1036	1277	.03	.05
U.S.A.	3300	752035.	946778.	1876.06	2384.19
U.S.S.R.	3180	0	0	1037.45	1250.26
UPPER VOLTA	2060	301	0	0	0
VIET NAM	2000	0	5341	0	0
YEMEN	2020	0	0	0	0
YUGOSLAVIA	3130	0	0	19.3	23.13
ZAIRE	2040	1154	2150	.4	.56
ZAMBIA	2250	1252	1421	.61	.82

FOR ALL COUNTRIES

AND VARIABLES 11 12 13 14 15

	VARIABLE				
COUNTRY	68 EN CON	71 EN CON	68 EN/CAP	71 EN/CAP	COAL RES.
AFGHANISTAN	.64	.47	39	27	85
ALGERIA	6.81	7.26	357	492	20
ARGENTINA	33.3	41.73	1480	1773	450
AUSTRALIA	60.7	68.81	5045	5359	16000
AUSTRIA	21.14	24.09	28.76	3231	3
BELGIUM	58.13	61.57	5237	5116	1796
BOLIVIA	.95	1.13	204	234	0
BRAZIL	39.89	47.7	446	500	10675
BULGARIA	27.74	34.41	3315	4029	1147
BURUNDI	.03	.04	8	11	0
CANADA	147.97	201.38	8086	9326	61000.
CHAD	.06	.1	18	27	0
CHILE	10.76	15.09	1151	1516	218
CHINA	0	0	0	0	1.01100E+06
COLOMBIA	0	0	0	0	12500
CUBA	8.43	9.97	1044	1152	0
CZECHOSLOV.	82.74	95.92	5762	6615	11573
DENMARK	22.83	26.45	4692	5327	0
DOM. REPUB.	.84	1.1	209	264	0
ECUADOR	1.49	1.96	251	315	0
EGYPT	9.54	9.69	301	282	0
EL SALVADOR	.63	.81	194	223	0
ETHIOPIA	.55	.81	23	32	0
FINLAND	16.34	20.3	3484	4334	0
FRANCE	163.95	201.48	3282	3928	2800
GERMANY	270.02	320.06	4488	5223	70000.
GHANA	1.06	1.65	126	192	0
GREECE	9.04	13.01	1027	1470	0
GUATEMALA	1.17	1.33	241	250	0
GUINEA	.37	.43	99	108	0
HAITI	.13	.14	28	29	0
HONG KONG	2.95	4.21	777	1040	0
HUNGARY	28.93	34.11	2837	3291	714
INDIA	94.49	103.52	185	186	106260.
INDONESIA	11.78	15.39	103	123	845
IRAN	13.17	26.66	486	895	1000
IRAQ	5.49	6.34	630	650	0
ISRAEL	5.53	8.16	2015	2710	0
ITALY	119.61	145.04	2267	2682	0
IVORY COAST	.65	1.17	158	265	0
JAPAN	254.47	341.9	2519	3267	19248
KENYA	1.48	2.01	140	171	0

(listing for variables 11-15 continued)

KENYA	1.48	2.01	140	171	0
KOREA	17.75	27.94	582	860	0
LAOS	.09	.28	30	91	0
W. MALAYSIA	3.73	4.31	425	453	0
MALI	.1	.13	21	25	0
MEXICO	53.36	64.7	1129	1270	3466
MOROCCO	2.71	3.13	186	205	96
NETHERLANDS	52.44	66.89	4121	5069	2394
NEPAL	.12	.1	12	9	0
NIGER	.07	.09	18	22	0
NIGERIA	1.75	3.33	33	59	350
NORWAY	16.24	20.29	4254	5189	165
PAKISTAN	10.79	12.88	87	96	1441
PERU	8.24	8.7	645	621	2334
PHILLIPINES	9.45	11.32	272	298	0
POLAND	120.67	143.24	3828	4374	45741.
PORTUGAL	5.12	7.14	541	805	26
ROMANIA	47.1	60.9	2388	2975	590
RWANDA	.03	.04	10	10	0
SA. ARABIA	4.57	7.87	625	988	0
SENEGAL	.55	.52	149	129	0
SO. AFRICA	59.04	71.71	2718	2995	72465.
S. RHODESIA	2.77	3.4	560	618	6613
SPAIN	41.86	55.08	1265	1614	0
SRI LANKA	1.37	2.07	114	163	0
SUDAN	1.35	1.91	91	119	0
SWEDEN	42.59	49.35	5379	6089	90
SWITZERLAND	18.56	22.63	3009	3575	0
SY ARAB REP	2.47	3.13	421	485	0
THAILAND	6.87	10.47	204	296	0
TURKEY	15.12	18.65	451	516	1335
UGANDA	.5	.73	62	72	0
UN. KINGDOM	274.83	306.68	4961	5507	15500
TANZANIA	.65	.93	53	70	370
U.S.A.	2080.32	2327.66	10393	11944	1.11000E+06
U.S.S.R.	965.21	1110.12	4050	4535	1.40639E+06
UPPER VOLTA	.05	.07	10	13	0
VIET NAM	5.54	5.46	318	290	1000
YEMEN	.56	.94	411	639	0
YUGOSLAVIA	95.21	33.07	1259	1408	313
ZAIRE	1.42	1.73	71	77	73
ZAMBIA	2.26	1.96	558	458	115

FOR ALL COUNTRIES
AND VARIABLES 16 17 18 19 20

COUNTRY	VARIABLE COA PRO.	LIGN. RES	LIGN. PRO	PETRO RES	PETRO PRO
AFGHANISTAN	135	0	0	0	0
ALGERIA	0	0	0	1235	50477.
ARGENTINA	670	0	0	344	22150
AUSTRALIA	49056.	95600.	23520	208	16119
AUSTRIA	0	143	3756	26	2478
BELGIUM	10500	0	0	0	0
BOLIVIA	0	0	0	88	2030
BRAZIL	2497	0	0	109	8172
BULGARIA	384	1117	24894	38	248
BURUNDI	0	0	0	0	0
CANADA	15810	24100	2978	1060	72997.
CHAD	0	0	0	0	0
CHILE	1330	5345	0	16	1613
CHINA	400000.	700	0	1709	29600
COLOMBIA	2800	0	0	226	10178
CUBA	0	0	0	0	117
CZECHOSLOV.	27235	9857	85566.	0	191
DENMARK	0	50	0	33	73
DOM. REPUB.	0	0	0	0	0
ECUADOR	0	0	0	834	4016
EGYPT	0	0	0.	531	10630
EL SALVADOR	0	0	0	0	0
ETHIOPIA	0	0	0	0	0
FINLAND	0	0	0	0	0
FRANCE	29763	30	2962	13	1484
GERMANY	102707.	30000	248451.	71	7098
GHANA	0	0	0	0	0
GREECE	0	1575	11318	0	0
GUATEMALA	0	0	0	0	0
GUINEA	0	0	0	0	0
HAITI	0	0	0	0	0
HONG KONG	0	0	0	0	0
HUNGARY	3671	5679	22171	30	1977
INDIA	74771.	2063	3067	90	7486
INDONESHA	179	2000	0	1466	54080.
IRAN	1000	0	0	8515	248498.
IRAQ	0	0	0	4433	71125.
ISRAEL	0	0	0	0	6043
ITALY	151	584	839	35	1152
IVORY COAST	0	0	0	0	0
JAPAN	28093	1733	102	3	711

(listing for variables 16-20 continued)

KENYA	0	0	0	0	0
KOREA	0	5	0	0	0
LAOS	0	0	0	0	0
W. MALAYSIA	0	0	0	196	4432
MALI	0	0	0	0	0
MEXICO	2170	0	0	389	22163
MOROCCO	547	0	0	0	28
NETHERLANDS	2812	0	0	39	1597
NEPAL	0	0	0	0	0
NIGER	0	0	0	0	0
NIGERIA	341	73	0	1729	90914.
NORWAY	455	0	0	462	1626
PAKISTAN	1251	280	0	5	435
PERU	92	4430	0	68	3194
PHILLIPINES	39	88	0	0	0
POLAND	150697.	14862	38221.	7	347
PORTUGAL	252	26	8	0	0
ROMANIA	6612	1367	16547	198	14128
RWANDA	0	0	0	0	0
SA. ARABIA	0	0	0	18458	285583.
SENEGAL	0	0	0	0	0
SO. AFRICA	58440.	0	0	0	0
S. RHODESIA	2762	0	0	0	0
SPAIN	11160	780	3070	9	143
SRI LANKA	0	0	0	0	0
SUDAN	0	0	0	0	0
SWEDEN	0	0	0	0	0
SWITZERLAND	0	0	0	0	0
SY ARAB REP	0	0	0	132	5642
THAILAND	0	0	345	7	13
TURKEY	4641	1881	5336	20	3410
UGANDA	0	0	0	0	0
UK. KINGDOM	119500.	0	0	716	83
TANZANIA	3	0	0	0	0
U.S.A.	535242.	406000.	6169	4899	466956.
U.S.S.R.	152467.	5716	400440.	0	0
UPPER VOLTA	0	0	0	0	0
VIET NAM	0	0	0	0	0
YEMEN	0	0	0	0	0
YUGOSLAVIA	599	26600	30341	48	3200
ZAIRE	123	0	0	0	0
ZAMBIA	959	0	0	0	0

FOR ALL COUNTRIES

AND VARIABLES 21 22 23 24

COUNTRY	VARIABLE N GAS RES	N GAS PRD	OIL RES PRD	H GAS PRD
AFGHANISTAN	0	2894	326	0
ALGERIA	3968	2894	1901	52
ARGENTINA	204	6183	23623	0
AUSTRALIA	1089	2608	57029.	3466
AUSTRIA	16	1963	28748	1673
BELGIUM	0	58	31597	2979
BOLIVIA	139	40	830	0
BRAZIL	26	1248	50988.	419
BULGARIA	28	980	21016	0
BURUNDI	0	0	21.5	0
CANADA	1499	82503.	216472.	2289
CHAD	0	0	43	0
CHILE	71	4080	6524	0
CHINA	99	0	0	0
COLOMBIA	73	1563	8750	146
CUBA	0	0	4072	77
CZECHOSLOV.	11	1167	47237.	7435
DENMARK	14	0	17540	398
DOM. REPUB.	0	0	1052	0
ECUADOR	128	14	1050	0
EGYPT	108	85	7591	0
EL SALVADOR	0	0	743	0
ETHIOPIA	0	0	585	0
FINLAND	0	0	20842	51
FRANCE	187	7517	148998.	6492
GERMANY	351	16924	253792.	18833
GHANA	0	0	2944	0
GREECE	0	0	8427	8
GUATEMALA	0	0	780	0
GUINEA	0	0	450	0
HAITI	0	0	115	0
HONG KONG	0	0	5574	61
HUNGARY	119	4110	14990	973
INDIA	44	693	60352.	0
INDONESIA	156	4126	2084	33
IRAN	5656	17185	8309	0
IRAQ	566	870	1929	0
ISRAEL	1	124	7639	0
ITALY	170	14142	124860.	2894
IVORY COAST	0	0	588	0
JAPAN	8	2428	385612.	5042

10

18

(listing for variables 21-24 continued)

KENYA	0	0	555	0
KOREA	0	0	10952	0
LAOS	0	0	16.1	0
W. MALAYSIA	0	0	3574	0
MALI	0	0	44.2	0
MEXICO	305	18694	31322	0
MOROCCO	0	52	2085	0
NETHERLANDS	2209	58385.	44904.	747
NEPAL	0	0	60	0
NIGER	0	0	38.3	0
NIGERIA	1161	159	1820	0
NORWAY	439	0	62930.	182
PAKISTAN	547	3795	7068	0
PERU	74	480	5324	0
PHILLIPINES	0	0	8666	22
POLAND	0	0	69867.	6782
PORTUGAL	0	0	7815	125
ROMANIA	0	0	39454.	522
RWANDA	0	0	34	0
SA. ARABIA	0	0	805	0
SENEGAL	0	0	303	0
SO. AFRICA	0	0	52717.	1800
S. RHODESIA	0	0	6800	0
SPAIN	0	0	61917.	2387
SRI LANKA	0	0	900	6
SUDAN	0	0	259	0
SWEDEN	0	0	66549.	511
SWITZERLAND	0	0	32785.	383
SY ARAB REP	0	0	1049	0
THAILAND	0	0	4545	0
TURKEY	0	0	9781	726
UGANDA	0	0	617	0
UN. KINGDOM	0	0	256098.	11647
TANZANIA	0	0	422	0
U.S.A.	0	0	1.71752E+06	26400
U.S.S.R.	0	0	800360.	33729.
UPPER VOLTA	0	0	33	0
VIET NAM	0	0	1215	0
YEMEN	0	0	6.2	0
YUGOSLAVIA	0	0	29509	169
ZAIRE	0	0	378	0
ZAMBIA	0	0	1168	0

19

How to Load the Program and Files

1. Load the three program tapes: EARTH, LDTAB, and LDLIST, and after each tape is loaded, NAME it and SAVE it--like this:

Load Tape for	NAME & SAVE by typing
EARTH	NAME-EARTH SAVE
LDTAB	NAME-LDTAB SAVE
LDLIST	NAME-LDLIST SAVE

2. Open and load the files by typing.

```
OPEN-LIST,14

OPEN-TABLE,83

GET-LDLIST

RUN
  (Computer will print DONE)

GET-LDTAB

RUN
  (Computer will print DONE)
```

3. Run the EARTH program by typing:

```
GET-EARTH

RUN
```

Hints on Using the Program

1. The program assumes you are using a Teletypewriter with all upper case letters. If you have lower case available, do not use it--all student input must be in upper case (capital) letters.

2. Only the first letter need be typed for any requested input. For example,

```
WANT INSTRUCTIONS (YES OR NO)?Y
```

Expanding the Data Base

Although the data base is complete and adequate for use with the EARTH unit, individual students or teachers may wish to add countries or variables to the data base, particularly if more recent data becomes available. Directions for doing so are given below.

1. To ADD COUNTRIES (up to a maximum total of 120 countries)

   a. In the EARTH program, type in the total number of countries you wish in each place marked by an underline below. The total 83 is currently in each of these positions in the program

      90 C = _____

      110 DIM C(__), V(24), R(__), O(__), P(__)

   b. In the LDLIST program, type in the total number of countries you wish in the place marked by an underline below. Again, the total 83 is currently in this position in the program.

      80 C = _____

      Retype the necessary DATA statements in LDLIST, adding the names of the additional countries in their correct alphabetical order. Insert DATA statements if necessary.

   c. In the LDTAB program, make the following changes:

      90 FOR Z = 1 to the total number of countries

      Insert DATA statements for each additional country, in correct alphabetical order. The DATA statements should include the name of the country followed by the 24 data items, in order.

   d. Open the TABLE and LIST files. LIST should still be opened to 14 records, and TABLE should be opened to a number of records equal to the number of countries you now have. For example, if you added five more countries, you would open the TABLE and LIST files as follows:

      OPEN-TABLE,88

      OPEN-LIST,14

   e. Load the files by RUNning the LDLIST and LDTAB programs.

2. To *ADD VARIABLES* (Up to a maximum total of 48 variables)

   a. In the EARTH program, make the following changes:

      100 V = the total number of variables (there are now 24)

      110 DIM C(83), V(__), R(83), O(83), P(83)
         the total number of variables

   b. In the LDLIST program, make the following changes:

      90 V = the total number of variables

      Add DATA statements after line 500 (Use the RENUMBER command periodically if you are adding several DATA statements between 500 and 510). For each variable added, the DATA should be of the format: 9-character abbreviation and 3 spaces, "a 43-character variable name."

   c. In LDTAB, make the following changes:

      70 DIM A$(14), V(__)
         the total number of variables

      130 FOR X = 110

      Insert a third DATA statement (e.g., at 195, 215, 235, 255, etc.) for each of the 83 (or more) countries. This third DATA statement should contain the values for each variable you added.

      If you are adding variables, but not countries, the files can be opened to the same sizes as for the original data base:

      OPEN-LIST,14

      OPEN-TABLE,83

3. To MAKE A CORRECTION IN AN INDIVIDUAL DATA ITEM

   Find the specific DATA statement in LDTAB and retype that statement, correcting the data item when you come to it. Then RUN LDTAB again to load the TABLE file with the corrected data base.

STUDENT GUIDE EXERCISES

Suggestions

Remind students of the following:

1. Where data on a particular variable was unobtainable or unavailable for a particular country, a zero was entered in the data base.

2. Do not enter zeros in the CAPITA or INCRS programs, except to stop. Instead, omit those countries for which a zero appears in the table.

3. In using the TABLE option, numbers of countries and variables must be entered in consecutive order.

Answers

1. Here are sample runs showing the expected student printout.

a.

```
WHICH OPTION?R

WHICH VARIABLE?12
ALL COUNTRIES (YES OR NO)?N
HOW MANY?12
TOP OR BOTTOM?T

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1971 ENERGY CONSUMED (M.M.T.C.E.)

U.S.A.              2327.64
U.S.S.R.            1112.19
JAPAN               341.9
GERMANY             320.06
UN. KINGDOM         306.68
FRANCE              201.48
CANADA              201.38
ITALY               145.04
POLAND              143.24
INDIA               102.52
CZECHOSLOV.         95.92
SO. AFRICA          71.71


WHICH OPTION?R

WHICH VARIABLE?12
ALL COUNTRIES (YES OR NO)?N
HOW MANY?12
TOP OR BOTTOM?B

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1971 ENERGY CONSUMED (M.M.T.C.E.)

SENEGAL             .52
AFGHANISTAN         .47
GUINEA              .43
LAOS                .28
HAITI               .14
MALI                .13
CHAD                .1
NEPAL               .1
NIGER               .09
UPPER VOLTA         .07
BURUNDI             .04
RWANDA              .04
```

b.

```
WHICH OPTION?T

HOW MANY COUNTRIES?24

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

?1
?10
?11
?12
?17
?25
?26
?30
?31
?34
?39
?41
?44
?46
?50
?51
?57
?60
?62
?63
?74
?76
?77
?78

HOW MANY VARIABLES (5 OR LESS, PLEASE)?2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?1
?8
FOR COUNTRIES 1      10     11     12     17     25     26     30     31     34
 39     41     44     46     50     51     57     60     62     63     74     76
 77     78
AND VARIABLES 1      8


              VARIABLE
COUNTRY       71 POP.       71 INCOME
```

d)

1971 INCOME PER CAPITA

COUNTRY	71 POP.	71 INCOME	1971 INCOME PER CAPITA
AFGHANISTAN	17.48	0	—
BURUNDI	3.615	200	$ 55.33
CANADA	21.595	81421.	$ 3770.36
CHAD	3.8	0	—
CZECHOSLOV.	14.5	0	—
FRANCE	51.25	132344.	$ 2582.32
GERMANY	75.129	194147.	$ 2584.18
GUINEA	4.01	315	$ 78.55
HAITI	4.969	500	$ 100.62
INDIA	550.374	46219.	$ 83.98
ITALY	54.078	93508.	$ 1729.13
JAPAN	104.661	198885.	$ 1900.28
LAOS	3.033	153	$ 50.45
MALI	5.143	0	—
NEPAL	11.29	887	$ 78.57
NIGER	4.126	0	—
POLAND	32.749	0	—
RWANDA	3.827	266	$ 69.51
SENEGAL	4.022	718	$ 178.52
SO. AFRICA	22.092	16567	$ 749.91
UN. KINGDOM	55.566	125735.	$ 2262.80
U.S.A.	207.05	946778.	$ 4572.70
U.S.S.R.	245.091	0	—
UPPER VOLTA	5.491	0	—

c. (Note: Countries with zeros in the table are omitted. Zeros mean "Data Unobtainable")

```
DONE
GET-CAPITA
RUN
CAPIT/

1971 INCOME PER CAPITA
ENTER POPULATION IN MILLIONS, THEN NAT'L. INCOME
IN MILLIONS OF DOLLARS (0,0 TO S )P)
?3.615,200
$ 55.325                    BURUNDI
?21.595,81421.
$ 3770.36                   CANADA
?51.25,132344
$ 2582.32                   FRANCE
?75.129,194147
$ 2584.18                   GERMANY
?4.01,315
$ 78.5536                   GUINEA
?4.969,500
$ 100.624                   HAITI
? 50.374,46219
$ 83.9774                   INDIA
?54.078,93508
$ 1729.13                   ITALY
?104.661,198885
$ 1900.28                   JAPAN
?3.033,153
$ 50.4451                   LAOS
?11.29,887
$ 78.5651                   NEPAL
?3.827,266
$ 69.5061                   RWANDA
?4.022,718
$ 178.518                   SENEGAL
?22.092,16567
$ 749.91                    SOUTH AFRICA
?55.566,125735
$ 2262.8                    UNITED KINGDOM
?207.05,946778
$ 4572.7                    U.S.A.
?0,0

DONE
```

2.

```
WHICH OPTION??T

HOW MANY COUNTRIES?34

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

?1
?10
?11
?12
?17
?25
?26
?30
?31
?34
?39
?41
?44
?46
?50
?51
?57
?60
?62
?63
?74
?76
?77
?78

HOW MANY VARIABLES (5 OR LESS, PLEASE)?1

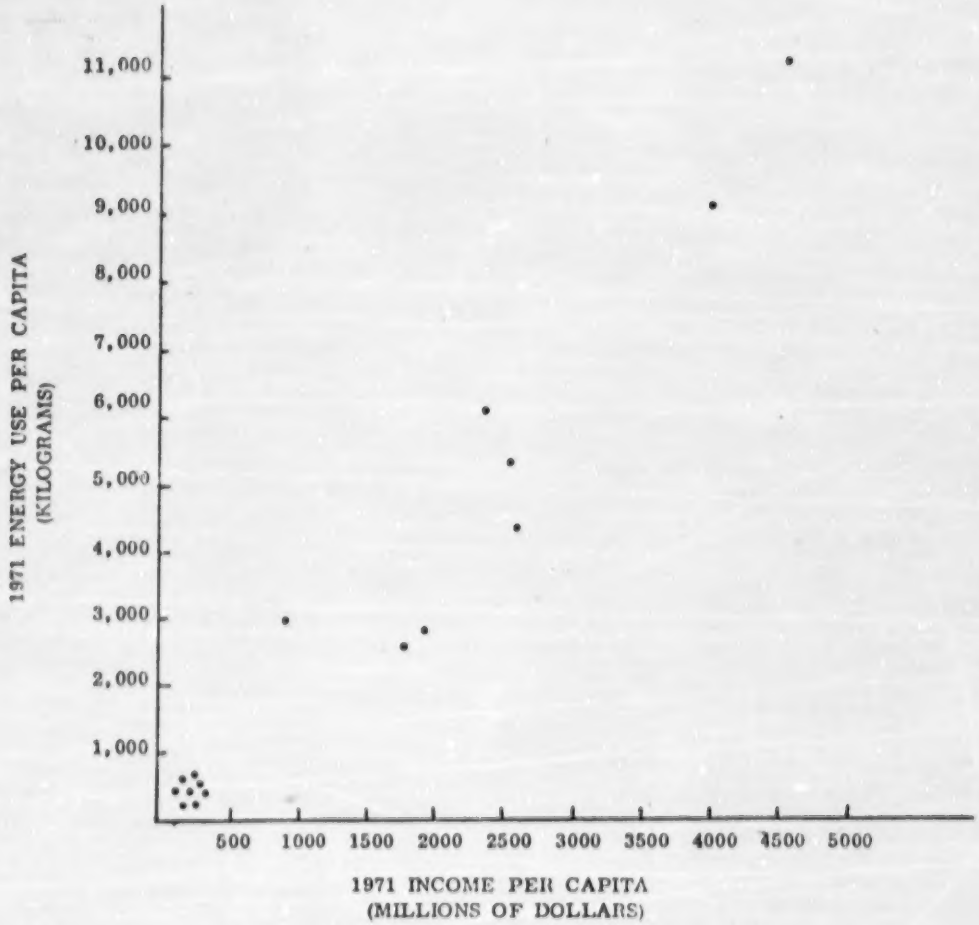
AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?14
FOR COUNTRIES 1     10    11    12    17    25    26    30    31    34
 39    41    44    46    50    51    57    60    62    63    74    76
 77    78
AND VARIABLES 14

              VARIABLE

COUNTRY       71 EN/CAP


AFGHANISTAN   27
BURUNDI       11
CANADA        9326
CHAD          27
CZECHOSLOV.   6615
FRANCE        3928
GERMANY       5223
GUINEA        108
HAITI         29
INDIA         166
ITALY         2682
JAPAN         3267
LAOS          91
MALI          25
NEPAL         9
NIGER         22
POLAND        4374
RWANDA        10
SENEGAL       129
SO. AFRICA    2695
UN. KINGDOM   5507
U.S.A.        11244
U.S.S.R.      4535
UPPER VOLTA   13
```




```
WHICH OPTION?T

HOW MANY COUNTRIES?12

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

?11
?17
?25
?26
?34
?39
?41
?57
?63
?74
?76
?77

HOW MANY VARIABLES (5 OR LESS, PLEASE)?2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

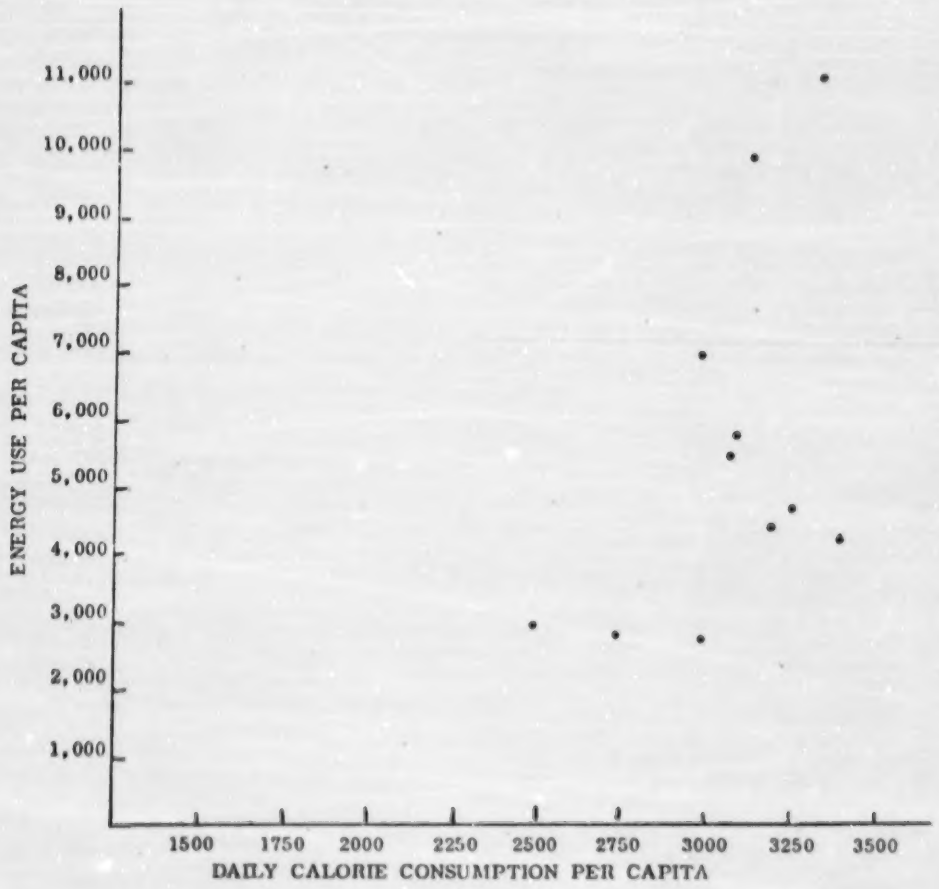
?6
?14
```

19

3.

FOR COUNTRIES 11 17 25 28 34 39 41 57 63 74
76 77
AND VARIABLES 6 14

COUNTRY	VARIABLE CAL. CONS	71 EN/CAP
CANADA	3200	9326
CZECHOSLOV.	3030	6615
FRANCE	3270	3928
GERMANY	3180	5223
INDIA	1990	196
ITALY	3020	2682
JAPAN	2470	3267
POLAND	3140	4374
SO. AFRICA	2730	2895
UN. KINGDOM	3170	5507
U.S.A.	3300	11244
U.S.S.R.	3180	4535



20

4. a. Values entered in a third column will vary, depending on the countries selected.

```
WHICH OPTION?T

HOW MANY COUNTRIES?83

HOW MANY VARIABLES (5 OR LESS, PLEASE)?2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?11
?12

FOR ALL COUNTRIES

AND VARIABLES 11    12

                VARIABLE

COUNTRY         68 EN CON     71 EN CON          Increase Rates

AFGHANISTAN     .64           .47
ALGERIA         4.81          7.26
ARGENTINA       33.3          41.75
AUSTRALIA       60.7          68.21
AUSTRIA         21.14         24.09
BELGIUM         52.13         61.57
BOLIVIA         .96           1.13
BRAZIL          39.89         47.7
BULGARIA        27.74         34.41
BURUNDI         .03           .04
CANADA          167.97        201.38             19.89 %
CHAD            .06           .1
CHILE           10.76         15.09
CHINA           0             0
COLOMBIA        0             0
CUBA            8.43          9.97
CZECHOSLOV.     82.76         95.92
DENMARK         22.83         26.45
DOM. REPUB.     .84           1.1
ECUADOR         1.49          1.98
EGYPT           9.54          9.69
EL SALVADOR     .63           .81
ETHIOPIA        .55           .81
FINLAND         16.34         20.3
FRANCE          163.95        201.48             22.89 %
GERMANY         270.02        320.06             18.53 %
GHANA           1.06          1.65
GREECE          9.04          13.01
GUATEMALA       1.17          1.33
GUINEA          .37           .43
HAITI           .13           .14
HONG KONG       2.95          4.21
HUNGARY         28.93         34.11
INDIA           94.49         102.52
INDONESIA       11.78         15.39
IRAN            13.17         26.66
IRAQ            5.49          6.34
ISRAEL          5.53          8.16
ITALY           119.61        145.04             21.26 %
IVORY COAST     .65           1.17
JAPAN           254.47        341.9              34.36 %
KENYA           1.48          2.01
KOREA           17.75         27.94
LAOS            .08           .28
W. MALAYSIA     3.73          4.31
MALI            .1            .13
MEXICO          53.36         64.7
MOROCCO         2.71          3.13
NETHERLANDS     52.44         66.89              27.55 %
NEPAL           .12           .1
NIGER           .07           .09
```

continued on next page...

4. a. (continued)

```
NIGERIA          1.75          3.33
NORWAY           16.24         20.29
PAKISTAN         10.79         12.88
PERU             8.24          8.7
PHILLIPINES      9.45          11.32
POLAND           123.67        143.24          15.82 %
PORTUGAL         5.12          7.14
ROMANIA          47.1          60.9
RWANDA           .03           .04
SA. ARABIA       4.57          7.87
SENEGAL          .55           .52
SO. AFRICA       59.04         71.71
S. RHODESIA      2.77          3.4
SPAIN            41.86         55.08
SRI LANKA        1.37          2.07
SUDAN            1.35          1.91
SWEDEN           42.59         49.35
SWITZERLAND      18.56         22.63
SY ARAB REP      2.47          3.13
THAILAND         6.87          10.47
TURKEY           15.12         18.65
UGANDA           .5            .73
UN. KINGDOM      274.83        306.68          11.59 %
TANZANIA         .65           .93
U.S.A.           2080.32       2327.64         11.89 %
U.S.S.R.         965.21        1112.19         15.23 %
UPPER VOLTA      .05           .07
VIET NAM         5.54          5.46
YEMEN            .56           .94
YUGOSLAVIA       25.21         33.07
ZAIRE            1.42          1.73
ZAMBIA           2.26          1.96
```

b. Again, values entered in a third column will vary, depending on the countries selected.

```
WHICH OPTION?T

HOW MANY COUNTRIES?83

HOW MANY VARIABLES (5 OR LESS, PLEASE)?2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?9
?10

FOR ALL COUNTRIES

AND VARIABLES 9      10

                VARIABLE

COUNTRY         68 EN PRO     71 EN PRO          Increase Rates

AFGHANISTAN     2.4           3.54
ALGERIA         59.16         52.99
ARGENTINA       30.54         37.43
AUSTRALIA       48.82         75.78
AURTRIA         10.08         9.77
BELGIUM         15.02         11.18
BOLIVIA         2.64          2.46
BRAZIL          17.66         20.39
BULGARIA        16.03         14.8
BURUNDI         0             0
CANADA          161.22        223.7           38.75 %
```

22

4. b. (continued)

CHAD	0	0	
CHILE	6.85	9.08	
CHINA	0	0	
COLOMBIA	0	0	
CUBA	.17	.26	
CZECHOSLOV.	72.99	81.79	
DENMARK	.25	0	
DOM. REPUB.	.01	.01	
ECUADOR	.36	.31	
EGYPT	11.52	19.81	
EL SALVADOR	.05	.06	
ETHIOPIA	.03	.03	
FINLAND	1.31	1.31	
FRANCE	61.87	54.22	-12.36 %
GERMANY	165.07	175.51	6.32%
GHANA	.32	.36	
GREECE	2.1	3.92	
GUATEMALA	.02	.03	
GUINEA	0	0	
HAITI	0	0	
HONG KONG	0	0	
HUNGARY	21.75	23.24	
INDIA	82.74	84.91	
INDONESIA	43.41	62.33	
IRAN	186.62	317.29	
IRAQ	96.89	110.07	
ISRAEL	2.97	8.23	
ITALY	23.29	26.26	12.75%
IVORY COAST	.03	.02	
JAPAN	59.81	49.47	-17.29 %
KENYA	.03	.04	
KOREA	10.36	12.95	
LAOS	0	0	
W. MALAYSIA	.1	.13	
MALI	0	0	
MEXICO	53.69	59.2	
MOROCCO	.72	.76	
NETHERLANDS	28.22	64.15	127.32%
NEPAL	0	.01	
NIGER	0	0	
NIGERIA	9.48	99.81	
NORWAY	7.8	8.67	
PAKISTAN	5.08	7.31	
PERU	6.01	5.27	
PHILLIPINES	.25	.37	
POLAND	140.88	163.8	16.27%
PORTUGAL	1.06	1.02	
ROMANIA	52.87	62.78	
RWANDA	.01	.01	
SA. ARABIA	186.18	295.35	
SENEGAL	0	0	
SO. AFRICA	51.77	58.83	
S. RHODESIA	3.57	3.75	
SPAIN	16.99	16.54	
SRI LANKA	.06	.1	
SUDAN	.01	.01	
SWEDEN	6.12	6.51	
SWITZERLAND	3.67	4.01	
SY ARAB REP	1.09	6.88	
THAILAND	.28	.39	
TURKEY	10.55	11.01	
UGANDA	.09	.1	
UN. KINGDOM	173.71	176.01	1.32%
TANZANIA	.03	.05	
U.S.A.	1876.06	2029.19	8.16 %
U.S.S.R.	1087.45	1250.26	14.97%
UPPER VOLTA	0	0	
VIET NAM	0	0	
YEMEN	0	0	
YUGOSLAVIA	19.3	23.13	
ZAIRE	.4	.56	
ZAMBIA	.61	.89	

5. (Note: Those countries for which data was unobtainable have been omitted from these tables.)

```
WHICH OPTION?R

WHICH VARIABLE?15
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

COAL RESERVES (M.M.T.)

U.S.S.R.          1.40638E+06
U.S.A.            1.11000E+06
CHINA             1.01100E+06
INDIA             106260.
SO. AFRICA        72465.
GERMANY           70000.
CANADA            61000.
POLAND            45741.
JAPAN             19248
AUSTRALIA         16000
UN. KINGDOM       15500
COLOMBIA          12500
CZECHOSLOV.       11573
BRAZIL            10675
S. RHODESIA       6613
MEXICO            3466
FRANCE            2800
NETHERLANDS       2394
PERU              2334
BELGIUM           1796
PAKISTAN          1661
TURKEY            1335
BULGARIA          1147
IRAN              1000
VIET NAM          1000
INDONESIA         845
HUNGARY           714
ROMANIA           590
ARGENTINA         450
TANZANIA          370
NIGERIA           350
YUGOSLAVIA        319
CHILE             218
NORWAY            166
ZAMBIA            115
MOROCCO           96
SWEDEN            90
AFGHANISTAN       85
ZAIRE             73
PORTUGAL          26
ALGERIA           20
AUSTRIA           3
```

```
WHICH OPTION?R

WHICH VARIABLE?17
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

LIGNITE & BROWN COAL RESERVES (M.M.T.)

U.S.A.          406000.
AUSTRALIA       95600.
GERMANY         30000
YUGOSLAVIA      26600
CANADA          24100
POLAND          14862
CZECHOSLOV.     9857
U.S.S.R.        5716
HUNGARY         5679
CHILE           5365
PERU            4630
INDIA           2063
INDONESIA       2000
TURKEY          1881
JAPAN           1733
GREECE          1575
ROMANIA         1367
BULGARIA        1117
SPAIN           780
CHINA           700
ITALY           524
PAKISTAN        280
AUSTRIA         143
PHILLIPINES     88
NIGERIA         73
DENMARK         50
FRANCE          30
PORTUGAL        26
KOREA           5
```

```
WHICH OPTION?5

WHICH VARIABLE?19
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1972 PETROLEUM RESERVES (M.M.T.)

SA. ARABIA      18658
IRAN            8515
U.S.A.          4899
IRAQ            4433
NIGERIA         1729
CHINA           1709
INDONESIA       1466
ALGERIA         1235
CANADA          1080
ECUADOR         834
UN. KINGDOM     716
EGYPT           531
NORWAY          462
MEXICO          389
ARGENTINA       344
COLOMBIA        226
AUSTRALIA       208
ROMANIA         198
W. MALAYSIA     196
SY ARAB REP     182
BRAZIL          104
INDIA           90
GERMANY         71
PERU            68
YUGOSLAVIA      48
NETHERLANDS     39
BULGARIA        38
ITALY           35
DENMARK         33
HUNGARY         30
BOLIVIA         28
AUSTRIA         26
TURKEY          20
CHILE           16
FRANCE          13
SPAIN           9
POLAND          7
PAKISTAN        5
JAPAN           3
```

```
WHICH OPTION?S

WHICH VARIABLE?21
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1972 NATURAL GAS RESERVES (1000 M.C.M.)

IRAN            5656
ALGERIA         3964
NETHERLANDS     2209
CANADA          1499
NIGERIA         1161
AUSTRALIA       1069
IRAQ            566
PAKISTAN        547
NORWAY          439
GERMANY         351
MEXICO          305
ARGENTINA       206
FRANCE          187
ITALY           170
INDONESIA       156
BOLIVIA         139
ECUADOR         122
HUNGARY         119
EGYPT           108
CHINA           99
PERU            74
COLOMBIA        73
CHILE           71
INDIA           44
BULGARIA        28
BRAZIL          26
AUSTRIA         16
DENMARK         14
CZECHOSLOV.     11
JAPAN           8
ISRAEL          1


WHICH OPTION?STOP

DONE
BYE
024 MINUTES OF TERMINAL TIME
J
```

SOURCES OF INFORMATION ON THE ENERGY CRISIS

Books

Energy and Power. W. H. Freeman. San Francisco: Scientific American Books, 1971. (Eleven easy-to-read articles about energy today.)

Energy in the United States: Resources, Uses and Policy Issues. H. H. Landberg and S. H. Schurr. New York: Random House, 1967.

Energy--The New Era. S. David Freeman. New York: Walker and Company, 1974. (A look at how the energy crisis developed, and how it might be improved.)

Energy for Survival. Wilson Clark. Garden City, New York: Anchor Books, 1974. (An analysis of alternate energy sources whose development might provide a partial solution to our energy problems.)

Energy Crisis--Volume 1, 1969-73. Lester A. Sobel, Ed. New York: Facts on File, Inc., 1974. (This book traces the development and events of the energy crisis through a series of news articles written as weekly coverage of news events.)

A Time to Choose--America's Energy Future. Final Report of the Energy Policy Project of the Ford Foundation. Cambridge, Massachusetts: Ballinger Publishing, 1974. (An examination of the future shape of the energy shortage, this report is very well documented with up to date data.)

Newspapers

Everyday newspapers carry new stories about the energy crisis, including local and national problems and plans.

Periodicals and Reference Works--Subject Headings

A wealth of information on the energy crisis is contained in periodicals and standard reference works like encyclopedias. Subject headings which you can use to locate information through card catalogs, Encyclopedia Yearbook Indexes, and other standard indexes are:

Atomic energy
Atomic power
Atomic research
Automobiles

Coal mines and mining
Coal research
Conservation of energy
Conservation of natural resources

Diesel engines

Economics
Electric power
Electric utilities
Electricity
Energy crisis
Energy crisis--U.S. Foreign Policy
Energy crisis--sources

Fuel
Fuel research
Fuel supply

Gas, natural
Gas, industry
Gas manufacture and works
Gasoline
Geothermal energy

Hydroelectric plants
Hydrogen, liquid

Industry and state
Industry and the environmental movement
Insulation
International Atomic Energy Agency

Nuclear fuels
Nuclear fusion
Nuclear reactors

Petroleum
Petroleum industry
Petroleum refineries
Petroleum supply
Power resources

Solar energy
Solar furnaces (heating)
Strip mining

United States Energy Agency
United States Federal Power Commission

Wind power

Program Listing of EARTH

```
GET-EARTH
LIST
EARTH

10  FILES TABLE,LIST
20  REM: THIS PROGRAM WRITTEN BY JUDY EDWARDS,NWREL, JUNE,1975
30  REM: 'EARTH' IS DESIGNED FOR USE WITH THE'EARTH' ENERGY UNIT
40  REM:ITS PURPOSE IS TO ALLOW STUDENTS TO QUERY A DATA BASE OF ENERGY
50  REM: INFORMATION ABOUT COUNTRIES.  SEE MANUALS FOR MORE INFO.
60  DIM A$[72],B$[72],C$[72],D$[72],E$[72],F$[72],G$[72],H$[72]
70  DIM I$[72],J$[72],K$[72],L$[72],M$[72],N$[72],O$[72],P$[72]
80  LET A=A1=A1=X=Y=J=I=Z=T=P=0
90  C=83
100  V=24
110  DIM C[83],V[24],R[83],O[83],P[83]
120  FILES TABLE,LIST
130  PRINT "WANT INSTRUCTIONS (YES OR NO)";
140  INPUT A$
150  IF A$[1,1]="N" THEN 200
160  REM* READ INSTRUCTIONS FROM 'LIST' FILE AND PRINT INSTRUCTIONS
170  READ #2,10
180  READ #2;A$,B$,C$,D$,E$,F$,G$,H$,I$,J$,K$,L$,M$,N$,O$,P$
190  PRINT A$,B$,C$,D$,E$,F$,G$,H$,I$,J$,K$,L$,M$,N$,O$,P$
200  PRINT LIN(3),"WHICH OPTION";
210  INPUT A$
220  IF A$[1,1]="H" THEN 170
230  IF A$[1,1]="T" THEN 330
240  IF A$[1,1]="R" THEN 1570
250  IF A$[1,1]="L" THEN 300
260  IF A$[1,1]="S" THEN 2270
270  PRINT "CHOOSE ONE OF THESE OPTIONS:"
280  PRINT "   TABLE",LIN(1),"   LIST",LIN(1),"   HELP",LIN(1),"   STOP"
290  GOTO 200
300  GOSUB 1250
310  GOTO 200
320  REM* THIS IS THE 'TABLE' OPTION
330  PRINT LIN(1),"HOW MANY COUNTRIES";
340  INPUT A1
350  IF A1>C THEN 510
360  IF A1=C THEN 560
370  PRINT LIN(1),"AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRI
380  PRINT "OR, TYPE '0' TO SEE THE LIST.",LIN(1)
390  FOR X=1 TO A1
400  INPUT C[X]
410  IF C[X]=0 THEN 530
420  IF C[X]>C THEN 490
430  IF X=1 THEN 450
440  IF C[X]<C[X-1] THEN 470
450  NEXT X
460  GOTO 590
470  GOSUB 1430
480  GOTO 370
490  PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN";C+1
500  GOTO 400
```

```
510  PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN";C+1
520  GOTO 330
530  GOSUB 1330
540  GOTO 330
550  REM* IF 'ALL COUNTRIES'
560  FOR X=1 TO C
570  C[X]=X
580  NEXT X
590  PRINT LIN(1),"HOW MANY VARIABLES (5 OR LESS, PLEASE)";
600  INPUT A2
610  IF A2>5 THEN 1190
620  PRINT LIN(1),"AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLE
630  PRINT "OR, TYPE '0' TO SEE THE LIST.",LIN(1)
640  FOR Y=1 TO A2
650  INPUT V[Y]
660  IF V[Y]=0 THEN 760
670  IF V[Y]>V THEN 720
680  IF Y=1 THEN 700
690  IF V[Y]<V[Y-1] THEN 740
700  NEXT Y
710  GOTO 790
720  PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN";V+1
730  GOTO 650
740  GOSUB 1430
750  GOTO 620
760  GOSUB 1470
770  GOTO 590
780  REM* PRINT HEADINGS FOR THE TABLE
790  IF A1=C THEN 1410
800  PRINT "FOR COUNTRIES";
810  FOR X=1 TO A1
820  PRINT C[X];
830  NEXT X
840  PRINT LIN(1),"AND VARIABLES";
850  FOR Y=1 TO A2
860  PRINT V[Y];
870  NEXT Y
880  PRINT LIN(3),TAB(12),"VARIABLE",LIN(2),"COUNTRY";
890  RESD #2,1
900  FOR X=1 TO (2*(V[1]-1))
910  READ #2;B$
920  NEXT X
930  READ #2;A$
940  PRINT TAB(12);A$;
950  FOR Y=2 TO A2
960  FOR X=1 TO ((2*(V[Y]-V[Y-1]))-1)
970  READ #2;B$
980  NEXT X
990  READ #2;A$
1000  PRINT TAB(Y*12);A$;
```

```
1010  NEXT Y
1020  PRINT LIN(2)
1030  REM* READ TABLE VALUES FROM 'TABLE' FILE AND PRINT TABLE
1040  FOR X=1 TO A1
1050  READ #1,C[X];C$
1060  PRINT C$;
1070  LET J=1
1080  FOR Y=1 TO A2
1090  READ #1;Z
1100  IF J=V[Y] THEN 1130
1110  LET J=J+1
1120  GOTO 1090
1130  PRINT TAB(Y*12);Z;
1140  LET J=J+1
1150  NEXT Y
1160  PRINT
1170  NEXT X
1180  GOTO 200
1190  PRINT LIN(1),"FOR MORE THAN 5, RUN A SECOND TABLE.  FOR NOW, ASK FO
1200  PRINT "ONLY THE FIRST 5 VARIABLES."
1210  LET A2=5
1220  GOTO 620
1230  PRINT "FOR ALL COUNTRIES";
1240  GOTO 840
1250  REM* THIS IS THE 'LIST' OPTION.
1260  PRINT "LIST COUNTRIES OR VARIABLES";
1270  INPUT A$
1280  IF A$[1,1]="C" THEN 1330
1290  IF A$[1,1]="V" THEN 1470
1300  PRINT "TYPE 'COUNTRIES' OR 'VARIABLES'";
1310  GOTO 1270
1320  REM* LIST COUNTRIES
1330  READ #2,7
1340  PRINT
1350  FOR I=1 TO C
1360  PRINT I;
1370  READ #2;A$
1380  PRINT A$
1390  NEXT I
1400  RETURN
1410  PRINT LIN(1),"FOR ALL COUNTRIES"
1420  GOTO 840
1430  PRINT LIN(1),"PLEASE START AGAIN AND ENTER YOUR NUMBERS IN ORDER,
1440  PRINT "WITH THE SMALLEST NUMBER."
1450  RETURN
1460  REM* LIST VARIABLES
1470  READ #2,1
1480  PRINT
1490  FOR I=1 TO V
1500  READ #2;A$,A$
```

```
1510  PRINT I;
1520  PRINT A$
1530  NEXT I
1540  PRINT LIN(1),"FOR MEANING OF ABBREVIATIONS, SEE YOUR MANUAL.",LIN(1
1550  RETURN
1560  REM* THIS IS THE 'SORT' ROUTINE.
1570  B=Q=0
1580  PRINT LIN(1),"WHICH VARIABLE";
1590  INPUT V1
1600  IF V1 <= V THEN 1630
1610  PRINT LIN(1),"ENTER A NUMBER LESS THAN";V+1
1620  GOTO 1570
1630  PRINT "ALL COUNTRIES (YES OR NO)";
1640  INPUT N$
1650  IF N$[1,1]="Y" THEN 1730
1660  PRINT "HOW MANY";
1670  INPUT Q
1680  PRINT "TOP OR BOTTOM";
1690  INPUT N$
1700  IF N$[1,1]="T" THEN 1730
1710  LET B=1
1720  GOTO 1730
1730  READ #1,1
1740  FOR Y=1 TO C
1750  READ #1,Y;C$
1760  FOR X=1 TO V1
1770  READ #1;Z
1780  NEXT X
1790  LET R[Y]=Z
1800  NEXT Y
1810  REM* ALL VALUES FOR V1 ARE NOW IN R(Y).  BEGIN SORT.
1820  PRINT LIN(1),"THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.",LIN(1)
1830  FOR X=1 TO C
1840  LET T=0
1850  FOR Y=1 TO C
1860  IF R[Y]=999999. THEN 1880
1870  IF R[Y]>T THEN 1900
1880  NEXT Y
1890  GOTO 1930
1900  LET T=R[Y]
1910  LET T1=Y
1920  GOTO 1880
1930  LET O[X]=T
1940  LET P[X]=T1
1950  LET R[T1]=999999.
1960  NEXT X
1970  IF Q=0 THEN 2160
1980  IF B=1 THEN 2080
1990  REM* PRINT Q VALUES FROM THE TOP OF THE RANK-ORDERED LIST
2000  GOSUB 2210
```

```
2010  FOR Y=1 TO Q
2020  READ #1,P(Y);C$
2030  IF O(Y)=0 THEN 2060
2040  PRINT C$,
2050  PRINT O(Y)
2060  NEXT Y
2070  GOTO 200
2080  REM* PRINT Q VALUES FROM THE BOTTOM OF THE RANK-ORDERED LIST
2090  GOSUB 2210
2100  FOR I=C TO 1 STEP -1
2110  IF O(I)#0 THEN 2130
2120  NEXT I
2130  FOR Y=(I-Q+1) TO I
2140  GOTO 2020
2150  NEXT Y
2160  REM* PRINT ALL VALUES FOR V1 FOR ALL COUNTRIES
2170  GOSUB 2210
2180  FOR Y=1 TO C
2190  GOTO 2020
2200  NEXT Y
2210  READ #2,1
2220  FOR X=1 TO 2*V1
2230  READ #2;A$
2240  NEXT X
2250  PRINT A$,LIN(1)
2260  RETURN
2270  END
```

LDTAB

```
10  FILES TABLE
20  REM: PROGRAM WRITTEN BY JUDY EDWARDS, NWREL, JUNE, 1975
30  REM:'LDTAB' LOADS THE ENERGY USE DATA FOR EACH OF 83 COUNTRIES
40  REM: INTO THE 'TABLE' FILE (OPEN IT TO 85 RECORDS, OR UP TO 120
50  REM: IF YOU PLAN TO ADDMORE COUNTRIES).  SEE MANUAL FOR
60  REM: DIRECTIONS FOR ADDING MORE COUNTRIES TO THE FILE.
70  DIM A$[14],V[24]
80  IF  END #1 THEN 1840
90  FOR Z=1 TO 83
110  READ A$
120  PRINT #1,Z;A$
130  FOR X=1 TO 24
140  READ V[X]
150  PRINT #1;V[X]
160  NEXT X
165  PRINT Z,A$,X,V[X-1]
170  NEXT Z
180  DATA "AFGHANISTAN",17.48,27,2.3,37.5,37.5,2060,0,0,2.4,3.54,.64,.47
190  DATA 39,27,85,135,0,0,0,0,0,2894,326,0
200  DATA "ALGERIA",14.769,6,3.5,50.7,50.7,1890,0,0,59.16,52.99,4.81,7.28
210  DATA 20,0,0,0,1235,50477.,3964,2894,1901,52
220  DATA "ARGENTINA",23.552,8,1.5,64.1,70.2,3160,18250,24500,30.56,37.68
230  DATA 41.75,1480,1773,450,675,0,0,344,22130,206,6183,23623,0
240  DATA "AUSTRALIA",12.723,2,1.9,67.9,74.2,3160,27075,32999.,48.82
250  DATA 75.78,60.7,68.21,5045,5359,16000,49056.,95600.,23630,208
255  DATA 16118,1069,2628,57099.,3466
260  DATA "AUSTRIA",7.456,89,.5,66.6,73.7,3230,0,14866,10.08,9.77,21.14,8
270  DATA 28.76,3231,3,0,143,3756,26,2478,16,1963,28748,1675
280  DATA "BELGIUM",9.673,317,.5,67.7,73.5,3230,18897,26474,15.02,11.18,8
290  DATA 61.57,5237,6116,1796,10500,0,0,0,0,0,52,31597,2979
300  DATA "BOLIVIA",5.063,5,2.6,49.7,49.7,1760,792,1000,2.64,2.46,.96
310  DATA 1.13,204,224,0,0,0,0,28,2030,139,40,830,0
320  DATA "BRAZIL",95.468,11,2.8,60.7,60.7,2820,26914,40000.,17.66,20.398
330  DATA 47.7,446,500,10675,2497,0,0,104,8179,26,1242,50988.,419
340  DATA "BULGARIA",8.54,77,.7,68.8,72.7,3070,0,0,16.03,14.8,27.74,34.41
350  DATA 3315,4029,1147,384,1117,26894,38,248,28,220,21016,0
360  DATA "BURUNDI",3.615,130,2,35,38.5,2330,160,200,0,0,.03,.04,8,11,0,0
370  DATA 0,0,0,0,0,21.5,0
380  DATA "CANADA",21.595,2,1.6,68.8,75.2,3200,58979.,81421.,161.22
390  DATA 223.7,167.97,201.38,8086,9326,61000.,15810,24100,2978,1080,7299
400  DATA 1499,82503.,216472.,2289
410  DATA "CHAD",3.8,3,2.3,29,35,2240,0,0,0,0,.06,.1,18,27,0,0,0,0,0,0,08
420  DATA "CHILE",8.992,12,1.4,54.4,59.9,2560,4829,5100,6.85,9.08,10.76
430  DATA 15.09,1151,1516,218,1332,5365,0,16,1613,71,4080,8524,0
440  DATA "CHINA",787.176,82,1.8,50,50,2050,0,0,0,0,0,0,0,0,1.011E+06,400
450  DATA 700,0,1709,29600,99,0,0,0
460  DATA "COLOMBIA",21.772,19,3.2,44.2,46,2140,6030,8700,0,0,0,0,0,0,128
470  DATA 2800,0,0,226,10134,73,1563,8750,146
480  DATA "CUBA",8.657,76,2.3,66.8,66.8,2500,0,0,.17,.26,8.43,9.97,1044,8
490  DATA 0,0,0,0,0,117,0,0,4072,77
500  DATA "CZECHOSLOV.",14.5,113,.4,67.3,73.6,3030,0,0,72.99,81.79,82.768
```

```
510  DATA 5762,6615,11573,27925,9857,85566.,0,191,11,1167,47237.,7435
520  DATA "DENMARK",4.963,115,.7,70.8,75.7,3250,11290,15834,.25,0,22.83
530  DATA 26.45,4692,5327,0,0,50,0,33,73,14,0,17540,398
540  DATA "DOM. REPUB.",4.182,86,2.9,57.2,58.6,2060,1074,1513,.01,.01,.84
550  DATA 1.1,209,264,0,0,0,0,0,0,0,0,1052,0
560  DATA "ECUADOR",6.297,22,3.4,51,53.7,1970,1270,1610,.36,.31,1.49,1.98
570  DATA 261,315,0,0,0,0,834,4016,122,14,1050,0
580  DATA "EGYPT",34.13,34,2.5,51.6,53.8,2770,5986,7000,11.52,19.81,9.54
590  DATA 9.69,301,282,0,0,0,0,531,10630,108,85,7591,0
600  DATA "EL SALVADOR",3.647,170,3.7,56.6,60.4,1850,864,1009,.05,.06,.68
610  DATA 194,223,0,0,0,0,0,0,0,0,743,0
620  DATA "ETHIOPIA",25.248,21,1.8,38.5,38.5,1980,1387,1750,.03,.03,.55,.8
630  DATA 23,32,0,0,0,0,0,0,0,0,585,0
640  DATA "FINLAND",4.684,14,.4,65.4,72.6,2940,7322,10195,1.31,1.31
650  DATA 16.34,20.3,3484,4334,0,0,0,0,0,0,0,0,20842,51
660  DATA "FRANCE",51.25,94,.9,68.6,76.1,3270,114427.,132344.,61.87,54.22
670  DATA 163.95,201.48,3282,3928,2800,29763,30,2962,13,1484,187
675  DATA 7517,148998.,6492
680  DATA "GERMANY",75.129,194,.7,67.6,73.6,3180,0,194147.,165.07,175.51
690  DATA 320.06,4488,5223,70000.,102707.,30000,248451.,71,7098,351,1692
700  DATA "GHANA",8.858,37,3,46,46,2070,1849,2485,.32,.36,1.06,1.65,126,2
710  DATA 0,0,0,0,0,0,0,0,2944,0
720  DATA "GREECE",8.85,67,.5,67.5,70.7,2900,3,8877,2.1,3.92,9.04,13.01
730  DATA 1027,1470,0,0,1575,11318,0,0,0,0,8427,8
740  DATA "GUATEMALA",5.348,49,3.1,48.3,49.7,2020,1489,1889,.02,.03,1.17
750  DATA 241,250,0,0,0,0,0,0,0,0,780,0
760  DATA "GUINEA",4.01,16,2.2,26,28,2060,282,315,0,0,.37,.43
770  DATA 99,108,0,0,0,0,0,0,0,0,450,0
780  DATA "HAITI",4.969,179,2,44.5,44.5,1930,402,500,0,0,.13,.14,28,29
790  DATA 0,0,0,0,0,0,0,0,115,0
800  DATA "HONG KONG",4.045,3912,2.1,66.7,73.3,2370,6000,1519,0,0,2.95
810  DATA 4.21,777,1040,0,0,0,0,0,0,0,0,5574,61
820  DATA "HUNGARY",10.351,111,.5,66.3,72.7,3190,0,0,21.75,23.24,28.93,34
830  DATA 2837,3291,714,3671,5679,22171,30,1977,119,4110,14990,973
840  DATA "INDIA",550.374,168,2.2,41.9,40.6,1990,0,46219.,82.74,84.91,948
850  DATA 102.52,185,186,106260.,74771.,2063,3067,90,7486,44,693,60352.,0
860  DATA "INDONESIA",124.894,84,2.8,47.5,47.5,1920,0,10828,43.41,62.33,8
870  DATA 15.39,103,123,845,179,2000,0,1466,54080.,156,4126,2084,33
880  DATA "IRAN",29.783,18,3,50,50,2030,0,9764,186.62,317.29,13.17,26.668
890  DATA 895,1000,1000,0,0,8515,248498.,5656,17185,8309,0
900  DATA "IRAQ",9.75,22,3.2,51.6,51.6,2050,0,2547,96.89,110.07,5.49,6.38
910  DATA 650,0,0,0,0,4433,71125.,566,870,1929,0
920  DATA "ISRAEL",3.013,146,3,70.1,73.4,2990,0,4761,2.97,8.23,5.53,8.16
930  DATA 2015,2710,0,0,0,0,0,6048,1,124,7639,0
940  DATA "ITALY",54.078,180,.8,67.9,73.4,3020,0,93508.,23.29,26.26,119.6
950  DATA 145.04,2267,2682,0,151,524,839,35,1152,170,14142,124860.,2894
960  DATA "IVORY COAST",4.42,14,2.4,41,41,2430,1193,1410,.03,.02,.65,1.17
970  DATA 158,265,0,0,0,0,0,0,0,0,588,0
980  DATA "JAPAN",104.661,283,1.1,69.1,74.3,2470,0,198885.,59.81,49.47,28
990  DATA 341.9,2519,3267,19248,28098,1733,102,3,711,8,2428,385612.,5042
1000  DATA "KENYA",11.694,20,3.1,47.5,47.5,2200,1208,1598,.03,.04,1.48,28
1010  DATA 140,171,0,0,0,0,0,0,0,0,555,0
1020  DATA "KOREA",46.198,210,2.4,57.7,57.7,2270,0,8455,10.36,12.95,17.75
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1030  DATA 27.94,582,860,0,0,5,0,0,0,0,0,10952,0
1040  DATA "LAOS",3.033,13,2.4,47.5,47.5,2040,0,153,0,0,.08,.28,30,91
1050  DATA 0,0,0,0,0,0,0,0,16.1,0
1060  DATA "W. MALAYSIA",8.978,68,2.4,63.8,66.7,2190,0,2783,.1,.13,3.73,8
1070  DATA 425,453,0,0,0,0,196,4432,0,0,3574,0
1080  DATA "MALI",5.143,4,2.1,37.2,37.2,2130,0,0,0,0,.1,.13,21,25
1090  DATA 0,0,0,0,0,0,0,0,44.2,0
1100  DATA "MEXICO",50.83,26,3.2,61,63.7,2620,25663,36000,,53.69,59.2
1110  DATA 53.36,64.7,1129,1270,3466,2170,0,0,389,22163,305,18694,31322,0
1120  DATA "MOROCCO",15.238,34,2.2,50.5,50.5,2130,2953,3660,.72,.76,2.71
1130  DATA 186,205,96,547,0,0,0,28,0,52,2085,0
1140  DATA "NETHERLANDS",13.194,323,1.2,70.7,76.5,3200,0,33555,,28.22,64
1150  DATA 52.44,66.89,4121,5069,2394,2812,0,0,39,1597,2209,58385,,44904
1160  DATA "NEPAL",11.29,80,1.8,40.6,40.6,2030,0,887,0,.01,.12,.1,12,9
1170  DATA 0,0,0,0,0,0,0,0,60,0
1180  DATA "NIGER",4.126,3,2.7,41,41,2170,369,0,0,0,.07,.09,18,22
1190  DATA 0,0,0,0,0,0,0,0,38.3,0
1200  DATA "NIGERIA",56.51,61,2.5,37.2,36.7,2290,4024,4750,9.48,99.81,1.5
1210  DATA 3.33,33,59,350,341,73,0,1729,90914,,1161,159,1820,0
1220  DATA "NORWAY",3.903,12,.8,71.1,76.8,2940,0,11181,7.8,8.67,16.24,202
1230  DATA 4254,5189,166,455,0,0,462,1626,439,0,62930,,182
1240  DATA "PAKISTAN",116.598,140,16.7,53.7,48.8,2410,0,14738,5.08,7.31,0
1250  DATA 12.88,87,96,1661,1251,280,0,5,455,547,3795,7068,0
1260  DATA "PERU",14.015,11,3.1,52.6,55.5,2260,0,4933,6.01,5.27,8.24,8.78
1270  DATA 621,2334,92,4630,0,68,3194,74,480,5324,0
1280  DATA "PHILLIPINES",37.919,126,3,48.8,53.4,2040,0,8899,.25,.37,9.458
1290  DATA 272,298,0,39,88,0,0,0,0,0,8666,22
1300  DATA "POLAND",32.749,105,.8,66.9,72.8,3140,0,0,140.88,163.8,123.67
1310  DATA 143.24,3828,4374,45741,,150697,,14862,38221,,7,347,0,0,69887.8
1320  DATA "PORTUGAL",9.037,98,0,65.3,71,2920,0,7214,1.06,1.02,5.12,7.148
1330  DATA 26,252,26,8,0,0,0,0,7815,125
1340  DATA "ROMANIA",20.47,86,1.1,65.5,69.8,3010,0,0,52.87,62.78,47.1,609
1350  DATA 2388,2975,590,6612,1367,16547,198,14128,0,0,39454,,522
1360  DATA "RWANDA",3.827,145,2.9,41,41,1900,163,266,.01,.01,.03,.04,10,0
1370  DATA 0,0,0,0,0,0,0,0,34,0
1380  DATA "SA. ARABIA",7.965,4,2.7,42.3,42.3,2080,0,2517,186.18,295.35,8
1390  DATA 7.87,625,988,0,0,0,0,18658,285583,,0,0,805,0
1400  DATA "SENEGAL",4.022,21,2.4,41,41,2300,782,718,0,0,.55,.52,149
1410  DATA 129,0,0,0,0,0,0,0,0,303,0
1420  DATA "SO. AFRICA",22.092,18,3.1,49,49,2730,12340,16567,51.77,58.83
1430  DATA 59.04,71.71,2718,2895,72465,,58440,,0,0,0,0,0,0,52717,,1800
1440  DATA "S. RHODESIA",5.5,14,3.3,51.4,51.4,2550,1085,1533,3.57,3.75,27
1450  DATA 3.4,560,618,6613,2762,0,0,0,0,0,0,6800,0
1460  DATA "SPAIN",34.134,68,1.1,67.3,71.9,2770,0,34073,,16.99,16.54,41.8
1470  DATA 55.08,1266,1614,0,11160,780,3070,9,143,0,0,61917,,2387
1480  DATA "SRI LANKA",12.762,195,2.3,61.9,61.4,2340,0,2005,.06,.1,1.37
1490  DATA 2.07,114,163,0,0,0,0,0,0,0,0,900,6
1500  DATA "SUDAN",16.087,6,2.8,47.6,47.6,2090,0,1701,.01,.01,1.35,1.91,9
1510  DATA 119,0,0,0,0,0,0,0,0,259,0
1520  DATA "SWEDEN",7.604,.18,.8,71.9,76.5,2850,0,32698,6.12,6.51,42.59,8
1530  DATA 5379,6089,90,0,0,0,0,0,0,0,66549,,511
1540  DATA "SWITZERLAND",6.324,153,1.2,68.7,74.1,3190,0,17954,3.67,4.01
1550  DATA 18.56,22.63,3009,3575,0,0,0,0,0,0,0,0,32785,,383
1560  DATA "SY ARAB REP",6.451,35,3.3,52.8,52.8,2450,0,1589,1.09,6.88
1570  DATA 2.47,3.13,421,485,0,0,0,0,182,5862,0,0,1049,0
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1580  DATA "THAILAND",35.335,69,2.7,53.6,58.7,2210,0,6406,.28,.39,6.87
1590  DATA 10.47,204,296,0,0,0,345,0,13,0,0,4545,0
1600  DATA "TURKEY",36.11,46,2.5,53.7,53.7,2760,0,12249,10.55,11.01,15.12
1610  DATA 18.65,451,516,1335,4641,1881,5336,20,3410,0,0,9781,726
1620  DATA "UGANDA",10.127,43,2.7,47.5,47.5,2160,893,1040,.09,.1,.5,.73,8
1630  DATA 72,0,0,0,0,0,0,0,0,817,0
1640  DATA "UN. KINGDOM",55.566,228,.4,67.8,73.8,3170,0,125735,,173.71
1650  DATA 176.01,274.83,306.68,4961,5507,15500,119500,,0,0,716,83,0,0,2
1660  DATA "TANZANIA",13.634,14,2.6,40,41,1700,1036,1277,.03,.05
1670  DATA .65,.93,53,70,370,3,0,0,0,0,0,0,422,0
1680  DATA "U.S.A.",207.05,22,1.1,71.1,71.1,3300,782035,,946778,,1876.06
1690  DATA 10398,11244,1.11E+06,535242,,406000,,6169,4899,466956,,0,0,1.
1700  DATA "U.S.S.R.",245.091,11,1.1,65,74,3180,0,0,1087.45,1250.26,965.
1710  DATA 4050,4535,1.40638E+06,152467,,5716,400440,,0,0,0,0,800360,,339
1720  DATA "UPPER VOLTA",5.491,20,2.1,32.1,36.1,2060,301,0,0,0,.05,.07,10
1730  DATA 13,0,0,0,0,0,0,0,0,33,0
1740  DATA "VIET NAM",40.404,123,2.5,50,50,2000,0,2841,0,0,5.54,5.46,3189
1750  DATA 1000,0,0,0,0,0,0,0,0,1215,0
1760  DATA "YEMEN",5.9,30,2.7,42.3,42.3,2020,0,0,0,0,.56,.94
1770  DATA 411,639,0,0,0,0,0,0,0,0,6.2,0
1780  DATA "YUGOSLAVIA",20.55,80,1,64.3,68.9,3130,0,0,19.3,23.13,25.21,39
1790  DATA 1259,1608,319,599,26600,30341,48,3200,0,0,29509,169
1800  DATA "ZAIRE",22.477,10,4.2,37.6,40,2040,1154,2150,.4,.56,1.42,1.737
1810  DATA 77,73,123,0,0,0,0,0,0,378,0
1820  DATA "ZAMBIA",4.275,6,2.9,43.5,43.5,2250,1229,1421,.61,.89,2.26,1.8
1830  DATA 458,115,959,0,0,0,0,0,0,1168,0
1840  END
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LDLIST

10  FILES LIST
20  REM: PROGRAM WRITTEN BY JUDY EDWARDS, NWREL, JUNE, 1975
30  REM: 'LDLIST' LOADS THE LIST OF COUNTRIES AND THE LIST OF VARIABLES
40  REM: INTO THE 'LIST' FILE (OPEN IT TO 14 RECORDS, OR AS MANY AS YOU
50  REM: NEED IF YOU ARE GOING TO ADD TO THE LISTS).  'LDLIST' ALSO
60  REM: LOADS THE INSTRUCTIONS AT THE END OF THE 'LIST' FILE.
70  REM: SEE MANUAL FOR DIRECTONS FOR ADDING TO THE LISTS.
80  C=83
90  V=24
100  DIM A$[72],B$[2]
110  IF  END #1 THEN 850
120  READ #1,1
130  FOR Z=1 TO V
140  READ A$,B$
150  PRINT #1;A$,B$
160  NEXT Z
170  READ #1,7
180  FOR Z=1 TO C
190  READ A$
200  PRINT #1;A$
210  NEXT Z
220  READ #1,10
230  FOR Z=1 TO 17
240  READ A$
250  PRINT #1;A$
260  NEXT Z
270  DATA "71 POP.      ","1971 POPULATION IN MILLIONS                    "
280  DATA "71 DENS.     ","1971 POPULATION DENSITY/SQ. KM.                "
290  DATA "POP. INCR    ","1963-1971 POPULATION INCREASE (%)              "
300  DATA "MALE EXP.    ","MALE LIFE EXPECTANCY                           "
310  DATA "FEM. EXP.    ","FEMALE LIFE EXPECTANCY                         "
320  DATA "CAL. CONS    ","CALORIE CONSUMPTION PER DAY PER CAPITA         "
330  DATA "68 INCOME    ","1968 NATIONAL INCOME (MILLIONS OF $$)          "
340  DATA "71 INCOME    ","1971 NATIONAL INCOME (MILLIONS OF $$)          "
350  DATA "68 EN PRO    ","1968 ENERGY PRODUCED (M.M.T.C.E.)              "
360  DATA "71 EN PRO    ","1971 ENERGY PRODUCED (M.M.T.C.E.)              "
370  DATA "68 EN CON    ","1968 ENERGY CONSUMED (M.M.T.C.E.)              "
380  DATA "71 EN CON    ","1971 ENERGY CONSUMED (M.M.T.C.E.)              "
390  DATA "68 EN/CAP    ","1968 ENERGY CONSUMED PER CAPITA (KG.)          "
400  DATA "71 EN/CAP    ","1971 ENERGY CONSUMED PER CAPITA (KG.)          "
410  DATA "COAL RES.    ","COAL RESERVES (M.M.T.)                         "
420  DATA "COAL PRO.    ","1972 COAL PRODUCED (T.M.T.)                    "
430  DATA "LIGN. RES    ","LIGNITE & BROWN COAL RESERVES (M.M.T.)         "
440  DATA "LIGN. PRO    ","1972 LIGNITE & BROWN COAL PRODUCED (T.M.T.)"
450  DATA "PETRO RES    ","1972 PETROLEUM RESERVES (M.M.T.)               "
460  DATA "PETRO PRO    ","1972 PETROLEUM PRODUCED (T.M.T.)               "
470  DATA "N GAS RES    ","1972 NATURAL GAS RESERVES (1000 M.C.M.)        "
480  DATA "N GAS PRO    ","1972 NATURAL GAS PRODUCED (M.C.M.)             "
490  DATA "EL EN PRO    ","1971 ELECTRICAL ENERGY PRODUCED (M.KWH.)       "
500  DATA "M GAS PRO    ","1971 MANUFACTURED GAS PRODUCED (M.C.M.)        "
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510  DATA "AFGHANISTAN","ALGERIA","ARGENTINA","AUSTRALIA","AUSTRIA"
520  DATA "BELGIUM","BOLIVIA","BRAZIL","BULGARIA","BURUNDI","CANADA"
530  DATA "CHAD","CHILE","CHINA","COLOMBIA","CUBA","CZECHOSLOVAKIA"
540  DATA "DENMARK","DOMINICAN REPUBLIC","ECUADOR","EGYPT","EL SALVADOR"
550  DATA "ETHIOPIA","FINLAND","FRANCE","GERMANY","GHANA","GREECE","GUAT
560  DATA "GUINEA","HAITI","HONG KONG","HUNGARY","INDIA","INDONESIA","IR
570  DATA "IRAQ","ISRAEL","ITALY","IVORY COAST","JAPAN","KENYA","KOREA"
580  DATA "LAOS","WEST MALAYSIA","MALI","MEXICO","MOROCCO","NETHERLANDS"
590  DATA "NEPAL","NIGER","NIGERIA","NORWAY","PAKISTAN","PERU","PHILLIPI
600  DATA "POLAND","PORTUGAL","ROMANIA","RWANDA","SAUDI ARABIA","SENEGAL"
610  DATA "SOUTH AFRICA","SOUTHERN RHODESIA","SPAIN","SRI LANKA","SUDAN"
620  DATA "SWEDEN","SWITZERLAND","SYRIAN ARAB REPUBLIC","THAILAND","TURKE
630  DATA "UGANDA","UNITED KINGDOLM","UN. REP. OF TANZANIA","U.S.A."
640  DATA "U.S.S.R.","UPPER VOLTA","VIET NAM","YEMEN","YUGOSLAVIA"
650  DATA "ZAIRE","ZAMBIA"
660  DATA "THE 'EARTH' PROGRAM OFFERS 5 OPTIONS.  THEY ARE--"
670  DATA "     TABLE:  THE COMPUTER WILL PRINT A TABLE SHOWING THE"
680  DATA "VALUES OF UP TO 5 VARIABLES FOR UP TO 83 COUNTRIES."
690  DATA "FIND THE LIST OF VARIABLES AND THE LIST OF COUNTRIES IN"
700  DATA "YOUR MANUAL (PP. XX AND XX) OR USE THE 'LIST' OPTION."
710  DATA "THESE LISTS GIVE YOU THE CODE NUMBER YOU SHOULD ENTER"
720  DATA "FOR EACH VARIABLE AND EACH COUNTRY."
730  DATA "     LIST:  THE COMPUTER WILL PRINT A LIST OF ALL VARIABLES"
740  DATA "OR ALL COUNTRIES IN THE FILE."
750  DATA "     RANK:  THE COMPUTER WILL RANK THE VALUES FOR A GIVEN VAR
760  DATA "AND PRINT THOSE VALUES IN RANK ORDER FROM HIGHEST TO LOWEST."
770  DATA "YOU CAN ASK FOR THESE VALUES FOR ALL COUNTRIES, OR YOU CAN"
780  DATA "SPECIFY A NUMBER OF COUNTRIES FROM THE TOP OR BOTTOM OF THE L
790  DATA "COUNTRIES FOR WHICH NO INFORMATION IS AVAILABLE WILL BE OMITT
800  DATA "     HELP:  THE COMPUTER WILL PRINT THIS LIST OF OPTIONS AGAI
810  DATA "     STOP:  TO END THE PROGRAM, TYPE 'STOP'."
820  DATA ""
830  DATA ""
840  DATA ""
850  END
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